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MODELING ECONOMIC SITUATIONS AS A METHOD FOR FORMING ECONOMIC COMPETENCE IN FUTURE TECHNOLOGY TEACHERS

Abstract

This article discusses the importance of using economic situation modeling as a method for forming economic competence in future technology teachers within the educational process. In the context of modern educational development and technological changes, economic knowledge and skills are essential for the effective work of educators. Modeling economic situations allows students not only to study theoretical aspects of economics but also to actively apply them in practice, developing the ability to make well-founded economic decisions in real-

world conditions. The article explores the main interactive teaching methods, including case-based learning, gamification, and role-playing, which engage future technology teachers in solving economic problems that arise in real production processes.

The case-based method is an important tool as it involves analyzing specific economic situations where students must solve problems related to costs, profits, and pricing strategies under limited resources. Using this method helps students develop critical thinking, the ability to analyze economic processes, and make informed decisions. Gamification creates an interactive learning environment where students can test their strategies in a changing market. This not only promotes the development of economic skills but also enhances communication skills, as students work in teams, allowing them to develop important collaboration and decision-making skills. Role-playing allows students to immerse themselves in the realities of the production process, where they take on various roles (e.g., company manager, technologist, financial manager), which helps them better understand the importance of an interdisciplinary approach in economic decisions.

The use of economic situation modeling in the educational process helps form not only theoretical knowledge but also practical skills necessary for future technology teachers to effectively manage educational projects and organize technological production processes. The article suggests that the use of interactive teaching methods, particularly through economic situation modeling, contributes to preparing future technology teachers for real economic challenges they may encounter in their professional careers. The research findings confirm that this approach is an effective tool for developing economic competence in the modern educational environment.

Keywords: economic situation modeling, economic competence, case-based learning, gamification, role-playing, preparation of future technology teachers, interactive teaching methods.

Problem Statement. Modeling economic situations is an important tool for forming economic competence in future technology teachers. In the context of the modern economy, where technological and economic processes are interconnected, the ability to analyze and solve real economic issues is becoming crucial not only for specialists in the field of economics but also for educators who must pass on knowledge about economic processes, entrepreneurship, and effective resource management to their students. In particular, technology teachers must have not only technical but also economic training to ensure that their students develop practical skills that meet the demands of the modern labor market.

Economic situation modeling allows students to understand the complexity of economic processes, the interconnections between different economic actors, and their impact on decision-making. It becomes the basis for developing critical thinking, analysis, and forecasting skills in future educators. Modern economic models and situations, based on real-life examples, help create practical conditions for acquiring knowledge that can be applied in technology lessons.

However, despite the significance of this method, not all curricula sufficiently address the importance of the economic component in preparing future technology teachers. In some cases, the economic aspect remains on the periphery of the educational process, reducing the effectiveness of forming economic competence in students. Therefore, it is essential to determine how the use of economic situation modeling can help address this issue and which methods and tools are most effective for integrating this approach into the educational process.

Thus, the issue of forming economic competence in future technology teachers through economic situation modeling is relevant and requires detailed investigation. It calls for the development of methodological recommendations that will allow the integration of economic modeling into curricula and make the process of preparing technology teachers more comprehensive and effective.

Analysis of Recent Research and Publications. An analysis of contemporary scientific and methodological literature shows that the issue of forming economic competence in future educators through economic situation modeling is an important direction in pedagogical research. However, the question of integrating the economic component into the training of technology teachers is less explored and requires further development of both theoretical and practical approaches. Among the main areas of research related to this issue, we can highlight pedagogical modeling, case methods, the use of situational approaches, and innovative methods such as gamification.

One of the important aspects of the research is the work of O. Ishutina, who in her article [1] emphasizes that pedagogical modeling is a powerful tool for forming the competence of future educators. The author notes that pedagogical modeling allows future technology teachers to acquire not only theoretical knowledge but also practical skills related to managing pedagogical processes and solving real tasks. She stresses that modeling economic situations can significantly improve the level of training for technology teachers, as it allows for the creation of situations close to real economic conditions, where future educators can apply the acquired knowledge.

In Ishutina's work, the role of modeling in the system of professional competence formation is analyzed, opening new possibilities for integrating economic aspects into teacher training. These approaches can be adapted to develop economic situation models in the training of technology teachers.

In the work of T. Lyakh [3], methods for using situational models in the educational process, particularly in language learning, are explored. Although her work is focused on language study, the basic principles upon which modeling is built can also be applied to economic situations. Lyakh emphasizes the importance of the situational approach in educational activities, where students have the opportunity to solve specific tasks that reflect real problems in professional activities. This approach helps students develop practical skills that are important not only in language but also in the economic sphere.

In L. Kozak's research [2], the issue of using the case method for preparing students for professional activity is discussed. The author emphasizes that this method is effective for solving complex problems that arise in real professional conditions. The case method allows the creation of situations in which students must make decisions under uncertainty, which is an important aspect of economic training for future educators. The use of this method in the training of future technology teachers can help form their economic competencies, providing them with the opportunity to work with real economic situations and make well-grounded decisions.

The research by S.O. Pereiaslavska and O.O. Smahina [5] emphasizes the use of gamification in the educational process. This is an innovative method that is gaining popularity in various fields, including teacher training. The authors note that gamification can be an effective tool for increasing student motivation and creating an interactive environment that facilitates deeper material comprehension. In the context of forming economic competencies, gamification can be used to create realistic economic situations, allowing students to test various strategies and make decisions with economic consequences.

Equally important is the study by N. Nychkala [4], which analyzes the role of project-based learning in professional education. The author highlights the significance of the project-based approach in the market economy, which allows

students not only to acquire theoretical knowledge but also to learn how to apply it in practice. She believes that designing economic situations in the educational process is necessary to prepare specialists who will be able to navigate market economy conditions and make effective decisions.

The analysis of these studies provides grounds to assert that modeling economic situations is an important tool in preparing future educators, particularly technology teachers, for the real conditions of professional activity. This approach enables students to develop not only theoretical knowledge but also practical skills necessary for solving economic problems in their future profession.

Considering current regulatory documents such as the Law of Ukraine "On Education" (2017), the State Standard of Primary Education (2018), the National Qualifications Framework (2011), the Concept of the New Ukrainian School (2016), and the State Education Development Program (2021), it should be noted that these documents define the requirements for the training of pedagogical staff, including the development of economic competence through modeling. They emphasize the importance of integrating innovative methods into the educational process, which serves as a foundation for introducing economic situation modeling as part of forming the economic competence of future technology teachers

The aim of this article is to explore the role of modeling economic situations as an effective method for developing the economic competence of future technology teachers.

Presentation of the main material of the study. The method of modeling economic situations proposed in the article is a key tool in the preparation of future technology teachers, as it allows the integration of economic knowledge with practical activity, which is essential for developing economic competence. According to this approach, students have the opportunity to apply their theoretical knowledge to solve real economic problems they may encounter in their professional activities. All stages of modeling aim not only to develop economic

skills but also to prepare future educators to make economically sound decisions in the educational environment.

The first task set before the teacher is to clearly define the objectives and tasks of modeling economic situations. The goal is not only to expand students' knowledge of economic processes but also to develop practical skills necessary for real professional activity. In the preparation of future technology teachers, emphasis is placed on aspects such as effective management of technological resources, cost calculation for production, as well as planning and controlling financial flows within educational or production projects. For example, one of the tasks could be to develop a financial plan for producing a new product, where students must take into account costs for materials, labor resources, and set prices for the final product.

The second stage involves creating and selecting realistic economic situations that allow students to work with specific economic problems. In this part of the methodology, it is important that the situations are as close as possible to the real conditions of technological production that students might face in practice. For example, students could be presented with a situation where they need to calculate the economic feasibility of purchasing new equipment for a training workshop or manufacturing a new product with a limited budget. They must not only assess the costs of purchasing, transporting, and installing equipment but also prepare a budget for its further operation, considering wear and tear, material needs, and labor force.

An important component of this methodology is the use of interactive teaching methods, such as case studies, gamification, and role-playing games, which allow students to actively engage in solving economic problems. The case method is extremely effective in modeling economic situations as it enables students to work with real problems that may arise in actual production or educational processes. This method creates opportunities for the active application

of theoretical knowledge in practice, allowing students to develop decision-making skills in complex economic conditions.

An example could be a situation where students are presented with a case involving a company that manufactures technical components for the automotive industry. In this case, students must conduct a detailed analysis of costs related to materials, labor, equipment depreciation, and transportation. They need to determine the total cost of producing the product, assess potential risks related to the instability of raw material prices, and develop an action plan to minimize these costs. Additionally, students must choose the most effective pricing strategy, considering both production costs and market conditions, competitive prices, and demand for the product. As a result of this task, students should propose not only a plan that will allow the company to achieve maximum profit but also maintain its competitiveness in the market.

Another example could be a case where students are tasked with solving a supply chain management issue at a company that manufactures complex technical devices for medical purposes. Students are required to analyze material supplies from various suppliers, determine the optimal number of purchases and transportation, and ensure timely deliveries without increasing storage costs for goods in the warehouse. Additionally, students must anticipate potential supply disruptions due to political or economic factors, such as changes in transport tariffs or changes in legislation regarding imports. This situation requires a comprehensive approach, taking into account many variables and potential risks, which makes this case extremely realistic and beneficial for students.

Thanks to the case method, students not only study the theory of economics and finance but also gain practical skills necessary for effective resource management, cost planning, and making strategic decisions in real-world conditions. This method helps develop critical thinking skills and the ability to adapt to changes, which are crucial for future technology teachers who will teach

their students realistic and practical approaches to solving economic problems in their professional activities.

Gamification is also an important component of this methodology, as it creates a more interactive and engaging learning environment, which contributes to a deeper understanding of the material. Through game elements, students have the opportunity to participate in simulations that replicate real economic situations, allowing them to not only gain theoretical knowledge but also apply it in practice under dynamic conditions.

For example, students could be offered a game where they have to create and manage a company that manufactures technological products, such as electronic components or mechanical devices. During the game, each team will have tasks related to the effective allocation of resources, production planning, marketing, and finance. Students must make decisions regarding material procurement, hiring employees, setting sales strategies, and pricing, enabling them to consider all key economic factors to achieve maximum profit and reduce costs.

An important part of such gamification activities is that students do not just complete individual tasks but work as a team, simulating real conditions of production and business management. This provides an opportunity not only to learn how to make economically sound decisions but also to develop teamwork, communication, and collective problem-solving strategies. Students learn to take into account various economic aspects, including risk assessment, which is an important component of the professional preparation of future technology teachers who need to pass on this knowledge to their students.

Moreover, in the process of gamification, students have the opportunity to assess the outcomes of their decisions in real-time, allowing them to see the consequences of their actions and adjust their strategy in time to achieve the desired results. This fosters the development of critical thinking and adaptability skills, which are crucial in today’s economy and technological environment.

Role-playing games, in turn, are an important part of this methodology, as they allow students to immerse themselves in real-world production conditions by taking on various roles, such as financial manager, technologist, business manager, or other professions directly affecting the economic outcomes of the company. In such games, students must make economic and managerial decisions that will determine the effectiveness of the company's operations, specifically impacting costs, profits, and the efficiency of production processes.

For example, in a role-playing game, students might be assigned tasks to work in teams, where each participant takes on one of the roles: production manager, procurement manager, financial analyst, or marketing specialist. Each of these roles has specific responsibilities related to resource management, cost planning, or strategic decisions regarding production and product distribution. Throughout the game, students must interact with one another and make well-considered decisions, taking into account not only the economic but also the technological and managerial aspects of the company's operations.

Such games not only allow students to experience real responsibility for the decisions made but also develop important critical thinking and teamwork skills. They teach how to properly combine economic, technological, and managerial aspects, which are necessary for the successful functioning of any enterprise. This allows students to understand the importance of an interdisciplinary approach in decision-making, where achieving optimal results requires considering all factors influencing the company's activities, as well as promoting the development of skills necessary for effective work in today's technological environment.

Students could be offered a role-playing game in which they must manage a company that manufactures technical products. One student could be the financial manager, another could be the technologist, and the third could be the business manager. Each of them makes important decisions that affect financial indicators and production efficiency: the financial manager decides how to optimize costs,

the technologist determines new technologies to improve product quality, and the business manager makes strategic decisions regarding production expansion. As a result of such a game, students can see how each of their decisions interacts with others, helping them understand the complexity and importance of economic decisions in real life.

The final stage involves assessing the results of the modeling and providing feedback to the students. After each exercise or situation, it is necessary to analyze the decisions made, determine how effectively the student applied economic knowledge, and evaluate how well-founded their decisions were. The assessment can be conducted in the form of presentations of the results, which allows each student to demonstrate their approach to solving the problem and receive feedback from the instructor and peers. Feedback is an important component of the learning process, as it helps students recognize mistakes, improve their strategies, and better prepare for the real conditions of professional activity.

As part of this methodology, it is also important to use an interdisciplinary approach, as economic situations require knowledge not only in economics but also in technology, management, and even psychology. For example, when calculating the cost of producing a technical product, students must consider not only material and labor costs but also the technological requirements of the production process. This fosters the development of comprehensive thinking in students, which is important for future technology teachers, as they must be prepared to solve various tasks that arise in real life.

Conclusions. Modeling economic situations is a powerful tool for developing the economic competence of future technology teachers, as it allows the integration of theoretical knowledge with practical skills necessary for their future professional activities. The use of methods such as the case method, gamification, and role-playing games promotes the development of students' ability to analyze

economic processes, make well-founded economic decisions, and work in conditions of instability and change.

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